General Notes.

PETROGRAPHY.[1]

Augen-Gneiss and Intrusive Rocks at Bedford, N. Y.—Luquer and Riess[2] mention an augen-gneiss near Bedford, West Chester Co., N. Y., as covering an area of 15 square miles. The augen are in large part orthoclase or microclinic crystals that have been squeezed and flattened. They often occur in bands and are always elongated parallel to the foliation of the gneiss in which they lie. The rock shows abundant evidence of mashing, the large orthoclase constituting the augen being bent and the quartz grains associated with them being much granulated. The origin of the gneiss is ascribed to the dynamic metamorphism of an acid igneous rock. Diorite dykes and great veins and masses of pegmatite occur in the gneiss. The pegmatites are regarded as vein masses produced by segregation agencies.

The Basic End-member of the Augite-Syenite-Nepheline-Syenite Series.—In the Lujavr-Urt on the peninsula of Kola, Russia, occurs the feldspar free nepheline-pyroxene rock to which the name iolite has been given. Associated with it is an orthoclase bearing rock whose chemical composition is similar to that of the nepheline porphyry from Magnet Cave, Ark., and from Beemerville, N. Y., (sussexit of Brögger) and of borolanite from Borolan. An analysis of the supposed iolite shows it to differ from typical iolite in possessing only aegirine among its bisilicate components, and to be much poorer in CaO than the typical rock. The composition of iolite from Iiwaara is given in (I), while that of the Lujavr-Urt rock is shown in (II). The composition of the basic end-member of the quartz-augite-syenite nepheline-syenite series as calculated by Brögger is shown in (III). The author admits that the Lujavr-Urt rock may be regarded as an

	TiO_2	SiO_2	Al_2O_3	Fe_2O_3	FeO	MnO	CaO	MgO	K_2O	Na_2O	P_2O_5	H_2O		Total
(I).	1.70	42.79	19.89	4.39	2.33	.41	11.76	1.87	1.67	9.31	1.70	.99	=	98.81
(II).		45.43	28.77	3.10	.40		1.86	.22	3.38	16.16			=	99.32
(III).		45.*	25.	6.5			2.0	1.5	7.0	12.		1.00	=	100.00

aegerine iolite, but he prefers to give it the distinctive name urtite. It is defined as a light colored, median grained rock composed of black

[1] Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

[2] Amer. Geologist, XVIII, p. 239.

aegerine particles in a mass of nepheline and apatite, the proportional quantities of the three minerals present being about 12 per cent. of the first named mineral, 86 per cent. of nepheline and 2 per cent. of apatite. The orthoclase bearing porphyritic rock referred to above, is intermediate in composition between genuine iolite and urtite.[3]

The Anorthosites of the Rainy Lake Region.—Coleman[4] describes a number of additional occurrences of anorthosite near Bad Vermilion Lake, Ontario. The rock is in the main a white aggregate of bytownite or anorthite with the addition of a little chlorite or serpentine and an occasional augite grain. The plagioclase grains are often idiomorphic, and in some places the anorthosite passes into a porphyritic gabbro. Often the feldspars are enlarged by newly formed labrodorite, and in one section a bytownite crystal has been broken apart and its fragments cemented by the more acid plagioclase. The author dissents from Lawson's view that the anorthosite in this region represents the denuded core of an old volcano, which later extruded granite. He is inclined to regard the basic rock as much older than the acid one. Analysis:

SiO_2	Al_2O_3	Fe_2O_3	FeO	MnO	CaO	MgO	Na_2O	K_2O	CO_2	Total	Sp. Gr.
46.24	29.85	1.30	2.12	tr	16.24	2.41	1.98	.18	1.03 =	101.35	2.85

Coleman suggests that all the rocks consisting almost exclusively of plagioclase shall be called plagioclasites, and the name of the plagioclase which is their principal constituent shall be prefixed to this. According to this scheme the name of the rock described above would be anorthite-plagioclasite.

Volcanic Rocks of the Fox Islands, Maine.—Reference has already been made in these notes to the existence of volcanic rocks in the islands of North Haven and Vinal Haven. Smith[5] has recently made a very careful examination of these rocks from both a geological and a petrographical standpoint. He finds the rocks on North Haven to consist of diabase schists and schistose tuffs, a series of acid volcanics and a small area of Niagara slates, limestones, etc. Vinal Haven is made up of acid volcanics, a series of fragmental schists and large masses of granitic and basic intrusive rocks in addition to acid volcanics like those found on the northern island. The greenstone schists of

[3] Ramsay: Aft. u Geol. Fören i Stockh. Förh. 18, 1896, p. 459.

[4] Journal of Geology, IV, p. 907.

[5] The Geology of the Fox Islands, Maine. Pub. by the author. Skowhegan, Maine, 1896.

North Haven are squeezed normal and amygdaloidal diabases and diabase tuffs. They are probably pre-Niagara in age. The fragmental schists in Vinal Haven are also probably pre-Niagara. They comprise mainly quartzites and quartzitic slates. The basic volcanics are altered andesites, porphyritic diabases and andesites, and various pyroclastics. They were erupted in Niagara time. Following the basic lavas come the acid ones of Vinal Haven, consisting of various types of rhyolite, among the most interesting of which is a spherulitic rock containing spherulites of several different kinds. The commonest kind is composed of branching radiate fibers of feldspar imbedded in a granular aggregate of quartz. Flow breccias and tuffs occur intermingled with the massive rhyolites. The volcanic rocks are cut by dykes of quartz porphyry of felsite and of diabase. The large intrusions of the southern portion of Vinal Haven are granites, diabases (the black granite of the quarrymen) and diorites. The granites are typical biotitic phases containing some hornblende. Near the contact with the diabases they are porphyritic. The diabase of the southern end of the island is an olivine variety, while that in the eastern part is a transition phase between diabase and diorite. It contains brown hornblende and biotite in equal quantities with augite. Some phases have in addition a considerable quantity of quartz. The diorite and diabase are older than the granite, and both granite and basic rocks are believed to be much later than the volcanics. The only rocks of the two islands that show evidence of dynamic metamorphism are the old diabasic schists of North Haven. All however present many evidences of metasmatic alteration. Their structure remains intact, but their mineralogical composition is quite different from what it was originally. The basic lavas are saussuritzed and their ferro-magnesian constituents are chloritized. The glassy lavas are devitrified.

Petrographical News.—Pockels[6] argues that the magnetic polarity exhibited by many different kinds of rocks is due to conduction of electricity from the air. They are 'charged.'

Brauns[7] describes a micro-chemical test for nitrates. A drop of the solution suspected of containing a nitrate is treated with a drop of barium chloride and warmed in the water bath. Upon cooling octahedral crystals of barium nitrate will crystallize if nitrates were originally present.

[6] Neues Jahrb. f. Min., etc., 1897, I, p. 66.

[7] Ib., p. 73.

Doelter[8] describes a number of syntheses of rock forming minerals and a series of experiments relating to the influence of mineralizers in the production of rock components. The descriptions close with remarks on the conclusions of petographic interest that may be deduced from the experiments.

The same author[9] declares as the result of microscopic and field studies that the granite of the Bachergebirge is an intrusive rock although it possesses gneissoid features. On maps of the district a granite porphyry is separated from the normal granite in coloring. This the author believes to be a mistake, as the two rocks are parts of the same magma.

The Koralps[10] are composed of mica-schists, interlaminated with amphibolites, eklogites, marbles and gneissic pegmatites. The mica-schists are overlain by phyllites and green schists. The pegmatites are of three kinds—a schistose aggregate of large tourmalines and feldspars, a granular aggregate of tourmaline, quartz and a little feldspar, and a massive quartz-rock containing a little tourmaline and feldspar. The amphibolites are in part garnetiferous.

GEOLOGY AND PALEONTOLOGY.

Rocks of the Antarctic Continent.—The rock specimens obtained by W. S. Bruce from floating ice and the stomach of Penguins in the Antarctic seas have been examined by Prof. Geikie, who makes the following report:

The larger specimens are all basalt, and contain a good deal of olivine. The small fragments are also mostly basalt, with some trachyte. All the specimens are what one finds upon the coasts of a region composed of igneous rocks. There was no trace of sedimentary or schistose rocks among the samples.

The marine deposits obtained by Mr. Bruce off the eastern extremity of Joinville Island were determined by John Murray and Robert Irvine. The specimens came from depths of 130 to 235 fathoms. They consist of fragments of polyzoa, basaltic gravel, basaltic and quartz sand, and blue mud. The latter contains mineral particles, which indicate that on the adjoining land will be found true continental rocks. (Geog. Journ., 1896.)

[8] Neues Jahrb. f. Min., etc., 1897, I, p. 1.

[9] Mitth. des Naturw. v. f. Steiermark, 1894.

[10] Doelter, Ib., 1895.